CTEH® CENTER FOR TOXICOLOGY AND ENVIRONMENTAL HEALTH, LLC

Mission Incident
Santa Paula, CA
Preliminary Summary of Air Monitoring Results
December 12, 2014

Prepared by
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CTEH® CENTER FOR TOXICOLOGY AND ENVIRONMENTAL HEALTH, LLC

Introduction

Center for Toxicology and Environmental Health, LLC (CTEH®) continued air monitoring in support of response activities following a vac truck explosion and fire in Santa Paula, CA.

This submittal summarizes air monitoring data for December 12, 2014 07:00 to December 13, 2014 07:00.

Real-time Air Monitoring

All instrumentation was calibrated at least once per day or per manufacturer's recommendations. Manually-logged real-time air monitoring was conducted for chlorine (Cl_2), hydrogen sulfide (H_2S), hydrochloric acid (HCl), percent of the Lower Explosive Limit (LEL), oxygen (O_2), peroxides, particulate matter (10 micron particles, PM_{10}), sulfur dioxide (SO_2), sulfuric acid (H_2SO_4), and volatile organic compounds (VOCs), with instruments such as Gastec® pumps with chemical-specific colorimetric tubes, RAESystems® MultiRAE Plus and MultiRAE Pro PID with chemical-specific sensors, and TSI® AM510s for particulate matter. Monitoring was conducted by CTEH® personnel in the work area, at fixed locations in the surrounding community, and along the perimeter of the facility in the community. Table 1 summarizes monitoring data for manually-logged real-time readings. Maps including the site location, fixed community real-time air monitoring locations, aerial site photo, and roaming monitoring are included in Appendix A.

CTEH® monitored RAESystems© AreaRAE units with ProRAE Guardian system at three locations on the fence line of the facility within the work area. AreaRAEs were equipped with sensors to detect VOCs, LEL, H_2S, and SO_2. AreaRAE Unit 01 recorded three instantaneous detections of VOCs ranging from 0.1 to 5.6 ppm at 12:43 on 12/12/2014. This concentration was not sustained, and VOC concentrations returned to 0 ppm by the next 15-second polling interval. Table 2 summarizes monitoring data for AreaRAE monitoring. AreaRAE graphs displaying real-time air monitoring data as well as 15-minute rolling averages and a map depicting AreaRAE locations are included in Appendix B.

No particulate monitors were data-logged along the facility perimeter during this reporting period due to heavy rains.

Table 1: Manually-Logged Real-Time Air Monitoring Summary[1]
December 12, 2014 07:00 – December 13, 2014 07:00

Location Category	Analyte	Instrument	No. of Readings	No. of Detections	Avg. of Detections	Concentration Range
Community	Cl_2	Gastec 8La	4	0	NA	<0.05 ppm
	H_2S	MR+ / MR Pro	9	0	NA	<1 ppm
	HCl	Gastec 14L	4	0	NA	<0.05 ppm
	LEL	MR+ / MR Pro	9	0	NA	<1 %
	O_2	MR+ / MR Pro	9	9	20.9	20.9 - 20.9 %
	Peroxides	Gastec 32	4	0	NA	<0.1 ppm
	SO_2	MR+ / MR Pro	9	0	NA	<0.1 ppm
	H_2SO_4	Gastec 35	4	0	NA	<0.2 mg/m^3
	VOC	MR+ / MR Pro	9	0	NA	<0.1 ppm
Work Area	Cl_2	Gastec 8La	6	0	NA	<0.05 ppm
	H_2S	MR+ / MR Pro	27	0	NA	<0.1 ppm
	HCl	Gastec 14L	8	0	NA	<0.05 ppm
	LEL	MR+ / MR Pro	26	0	NA	<1 %
	O_2	MR+ / MR Pro	24	24	20.9	20.9 - 20.9 %
	Peroxides	Gastec 32	6	0	NA	<0.1 ppm
	PM_{10}	AM510/Dusttrak	16	16	0.005	0.002 - 0.009 mg/m^3
	SO_2	MR+ / MR Pro	10	0	NA	<0.1 ppm
	H_2SO_4	Gastec 35	4	0	NA	<0.2 mg/m^3
	VOC	MR+ / MR Pro	26	0	NA	<0.1 ppm

[1]*Note: The data set displayed here has not undergone complete QA/QC analysis and is presented in a preliminary format.*
[2]*Maximum detections preceded by the "<" symbol are considered non-detects below reporting limit to the right.*

Table 2: AreaRAE Air Monitoring Summary[1]
December 12, 2014 07:00 – December 13, 2014 07:00

Unit ID	Analyte	No. of Readings	No. of Detections	Avg. of Detections	Detection Range
Unit 01	H_2S	5697	0	NA	< 1 ppm
	LEL	5697	0	NA	< 1 %
	SO_2	5697	0	NA	< 0.1 ppm
	VOC	5697	3	2.0 ppm	0.1 - 5.6 ppm
Unit 02	H_2S	5691	19	0.1 ppm	0.1 - 0.1 ppm
	LEL	5691	0	NA	< 1 %
	SO_2	5691	2	0.1 ppm	0.1 - 0.1 ppm
	VOC	5691	39	0.1 ppm	0.1 - 0.5 ppm
Unit 03	H_2S	2391	0	NA	< 1 ppm
	LEL	2391	0	NA	< 1 %
	SO_2	2391	0	NA	< 0.1 ppm
	VOC	2391	0	NA	< 0.1 ppm

[1]*Note: The data set displayed here has not undergone complete QA/QC analysis and is presented in a preliminary format.*
[2]*Maximum detections preceded by the "<" symbol are considered non-detects below reporting limit to the right.*

Appendix A

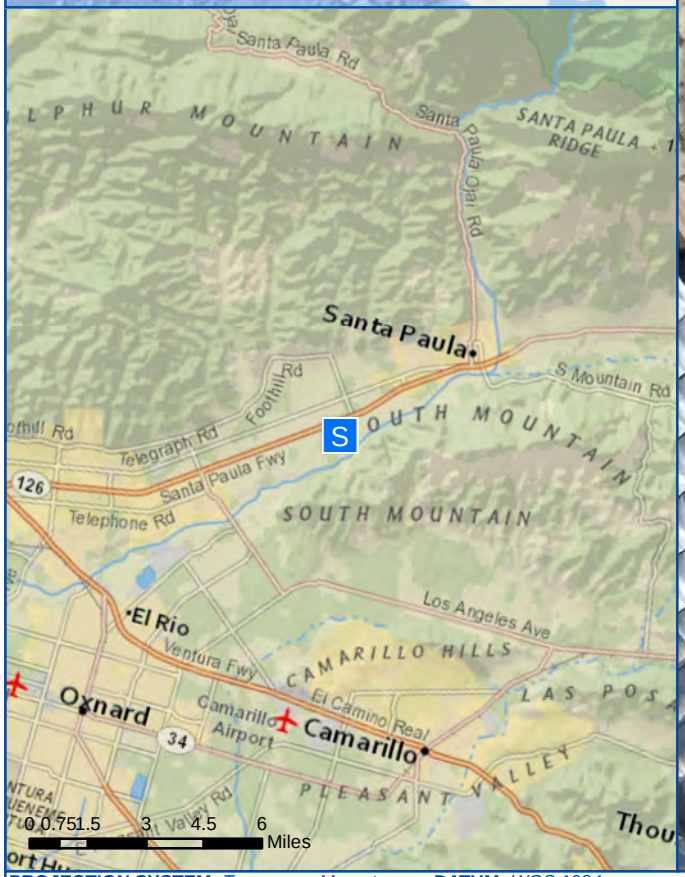
Incident Maps:

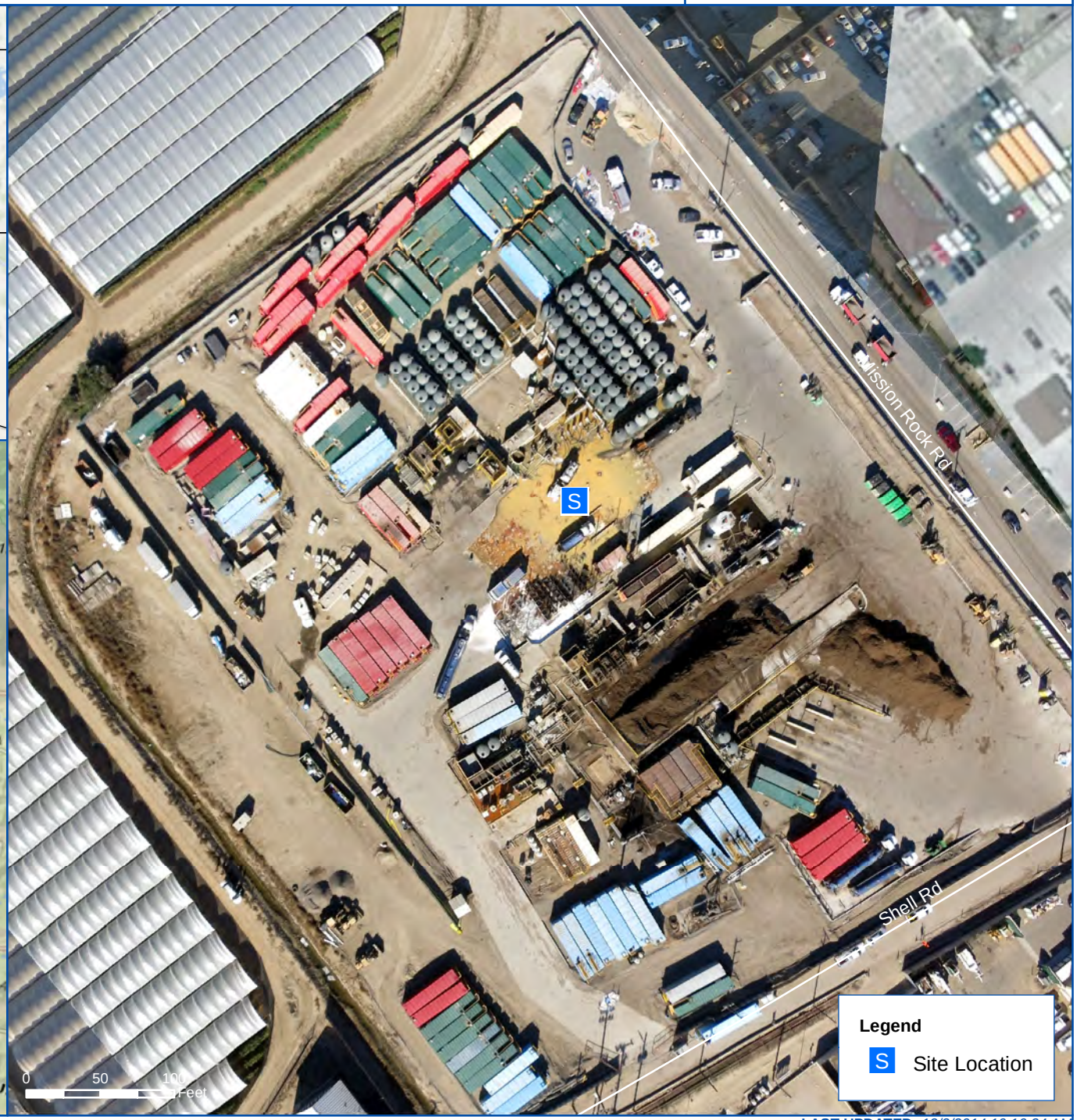
Real-time Air Monitoring Locations and Incident Site

Site Location

Mission Incident

Project: 106846
Client: Patriot Environmental
City: Santa Paula, CA
County: Ventura





PROJECTION SYSTEM: *Transverse Mercator* **DATUM:** *WGS 1984* **LAST UPDATED:** *12/2/2014 10:10:34 AM*

Aerial Overview - 12/12/2014

Mission Incident

Project: 106846
Client: Patriot Environmental
City: Santa Paula, CA
County: Ventura

PROJECTION SYSTEM: *Transverse Mercator* **DATUM:** *WGS 1984* **LAST UPDATED:** *12/12/2014 6:03:22 PM*

Fixed Community Real-Time Air Monitoring Station Locations

Mission Incident

Project: 106846
Client: Patriot Environmental
City: Santa Paula, CA
County: Ventura

PROJECTION SYSTEM: *Transverse Mercator* **DATUM:** *WGS 1984* **LAST UPDATED:** *11/25/2014 12:22:02 PM*

Manually Logged Real-Time Air Monitoring Concentrations

VOC - Dec 12, 2014 07:00 to Dec 13, 2014 07:00

CTEH Project#: 106846
Client: Patriot Environmental
City: Santa Paula, CA
County: Ventura

PROJECTION SYSTEM: *UTM13N* **COORDINATE SYSTEM:** *WGS84* **Print Date:** *12/13/2014 8:01:34 AM*

Manually Logged Real-Time Air Monitoring Concentrations

H_2SO_4 - Dec 12, 2014 07:00 to Dec 13, 2014 07:00

CTEH Project#: 106846
Client: Patriot Environmental
City: Santa Paula, CA
County: Ventura

PROJECTION SYSTEM: *UTM13N* **COORDINATE SYSTEM:** *WGS84* **Print Date:** *12/13/2014 8:24:15 AM*

Manually Logged Real-Time Air Monitoring Concentrations

SO_2 - Dec 12, 2014 07:00 to Dec 13, 2014 07:00

CTEH Project#: 106846
Client: Patriot Environmental
City: Santa Paula, CA
County: Ventura

PROJECTION SYSTEM: *UTM13N* **COORDINATE SYSTEM:** *WGS84* **Print Date:** *12/13/2014 8:23:06 AM*

Manually Logged Real-Time Air Monitoring Concentrations

PM_{10} - Dec 12, 2014 07:00 to Dec 13, 2014 07:00

CTEH Project#: 106846
Client: Patriot Environmental
City: Santa Paula, CA
County: Ventura

PROJECTION SYSTEM: *UTM13N* **COORDINATE SYSTEM:** *WGS84*

Print Date: *12/13/2014 8:22:01 AM*

Manually Logged Real-Time Air Monitoring Concentrations

Peroxides - Dec 12, 2014 07:00 to Dec 13, 2014 07:00

CTEH Project#: 106846
Client: Patriot Environmental
City: Santa Paula, CA
County: Ventura

PROJECTION SYSTEM: *UTM13N* COORDINATE SYSTEM: *WGS84*

Print Date: *12/13/2014 8:18:57 AM*

Manually Logged Real-Time Air Monitoring Concentrations

O_2 - Dec 12, 2014 07:00 to Dec 13, 2014 07:00

CTEH Project#: 106846
Client: Patriot Environmental
City: Santa Paula, CA
County: Ventura

PROJECTION SYSTEM: *UTM13N* COORDINATE SYSTEM: *WGS84*

Print Date: *12/13/2014 8:17:52 AM*

Manually Logged Real-Time Air Monitoring Concentrations

LEL - Dec 12, 2014 07:00 to Dec 13, 2014 07:00

CTEH Project#: 106846
Client: Patriot Environmental
City: Santa Paula, CA
County: Ventura

PROJECTION SYSTEM: *UTM13N* COORDINATE SYSTEM: *WGS84*

Print Date: *12/13/2014 8:16:22 AM*

Manually Logged Real-Time Air Monitoring Concentrations

HCl - Dec 12, 2014 07:00 to Dec 13, 2014 07:00

CTEH Project#: 106846
Client: Patriot Environmental
City: Santa Paula, CA
County: Ventura

PROJECTION SYSTEM: *UTM13N* **COORDINATE SYSTEM:** *WGS84*

Print Date: *12/13/2014 8:14:35 AM*

Manually Logged Real-Time Air Monitoring Concentrations

H_2S - Dec 12, 2014 07:00 to Dec 13, 2014 07:00

CTEH Project#: 106846
Client: Patriot Environmental
City: Santa Paula, CA
County: Ventura

PROJECTION SYSTEM: *UTM13N* COORDINATE SYSTEM: *WGS84*

Print Date: *12/13/2014 8:13:31 AM*

Manually Logged Real-Time Air Monitoring Concentrations

Cl_2 - Dec 12, 2014 07:00 to Dec 13, 2014 07:00

CTEH Project#: 106846
Client: Patriot Environmental
City: Santa Paula, CA
County: Ventura

PROJECTION SYSTEM: *UTM13N* **COORDINATE SYSTEM:** *WGS84* **Print Date:** *12/13/2014 8:11:26 AM*

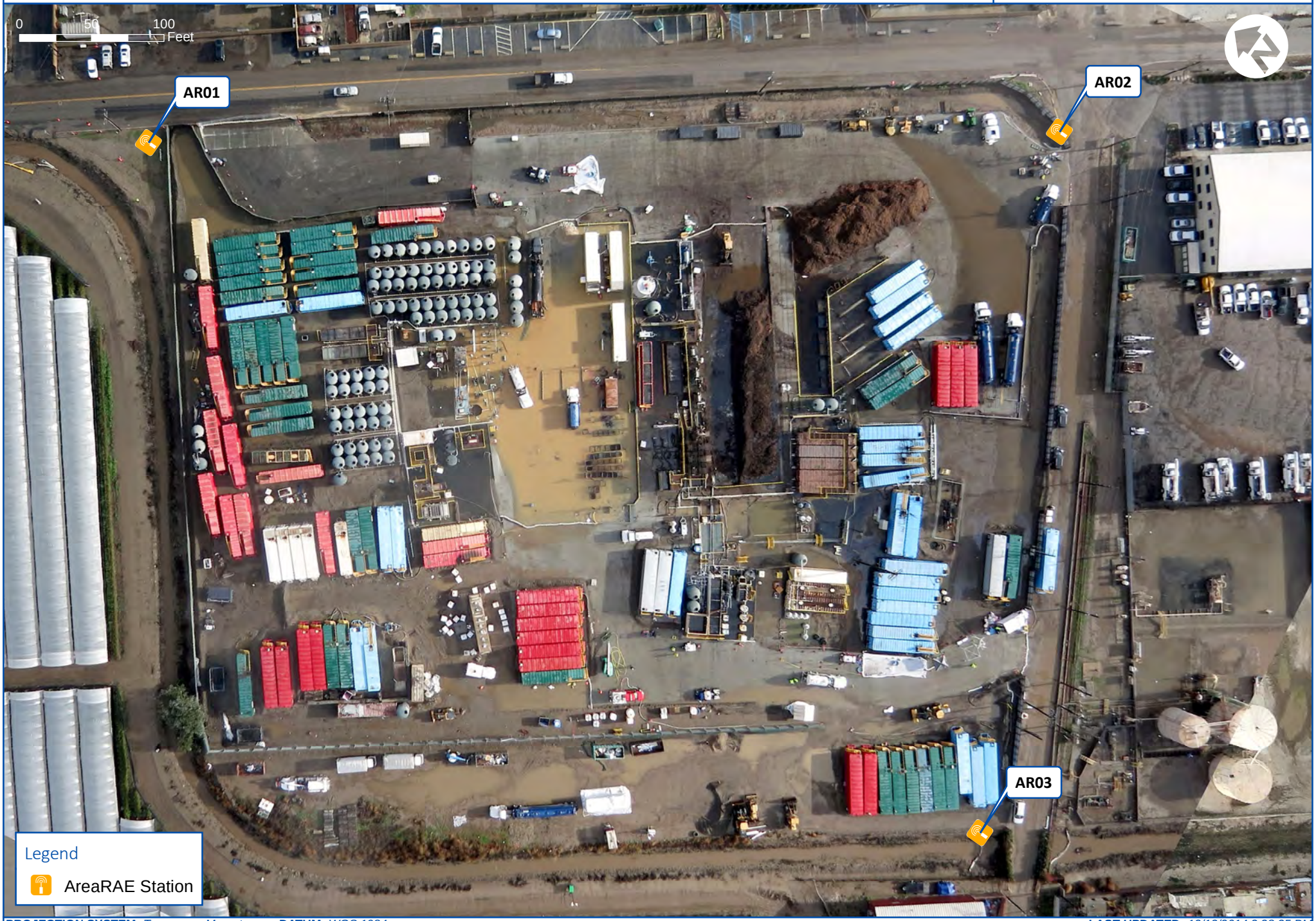
Appendix B:

AreaRAE Trend Graphs and AreaRAE Air Monitoring Location Map

AreaRAE Locations

Mission Incident

Project: 106846
Client: Patriot Environmental
City: Santa Paula, CA
County: Ventura



PROJECTION SYSTEM: *Transverse Mercator* **DATUM:** *WGS 1984* **LAST UPDATED:** *12/13/2014 3:38:35 PM*

Patriot Environmental
AreaRAE Trend Graphs
12/12/2014 07:00 - 12/13/2014 07:00

- The data set displayed here has not undergone complete QA/QC analysis and is presented in a preliminary format
- AreaRAE data may contain "drift events." Drift is defined as interference in the electrochemical sensor's ability to accurately report the concentration of a chemical in the atmosphere, resulting in "false positives"